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WILDLIFE REVIEW

AN ABSTRACTING SERVICE FOR WILDLIFE MANAGEMENT
ISSUED FOR THE INFORMATION OF COOPERATORS
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Except as indicated, abstracts are by Neil Hotchkiss, editor.

WILDLIFE (GENERAL)--BEHAVIOR

ENNION, E. A. R. The story of migration. 100 pages, illus. Oxford University Press, Toronto. 1947. $3.00.

The story progresses in intimate detail from the beginning of life on earth through the irregular wanderings of man and other animals to the regular migrations of sea animals and of birds. It was written for young people; but the author has also made it an entertaining and instructive book for adults.

WILDLIFE (GENERAL)--CONTROL

EADIE, W. ROBERT, and HAMILTON, W. J., JR. Control of small animals in homes and gardens. Cornell Extension Bulletin 729. 20 pages, illus. November 1947.

The authors describe the habits and control of squirrels, chipmunks, woodchucks, cottontails, mice, moles, bats, skunks, porcupines, and snakes.

HAMER, AUSTIN F. Game damage in Oregon. Oregon State Game Commission Bulletin 3(3): 1,6-7, illus, March 1948.

Damage to gardens and commercial crops is becoming an increasingly important problem in many states. In Oregon the offenders include black-tail deer (the worst), elk, pheasants, waterfowl, beaver, and muskrats. The author discusses such methods of control as woven wire and electric fences, chemical repellents, frightening devices, and special hunting seasons. In a particular instance, he recommends the consideration of all known methods of control.

WILDLIFE (GENERAL)--DISEASES

ANASTOS, GEORGE. Hosts of certain New York ticks. Psyche 54(3): 178-180. September 1947.

This paper is a record of about 1000 ticks of 6 species collected at the eastern end of Long Island, New York, from May to September 1946, at 3 stations: Montauk Point, Hither Hills State Park, and Hook Pond (East Hampton). The hosts include 5 species of birds and 12 of mammals. --M. Alberts

ANONYMOUS. Tularemia, an animal-borne disease. U. S. D. I., Fish and Wildlife Service, Wildlife Leaflet 271. 4 pages. June, 1948.

This is a revision of Wildlife Leaflet 271, first published in May 1945. It discusses the nature and history of the disease, and describes its symptoms in man and wild rabbits. The animals in which tularemia has been found include wild hares, a large variety of rodents, opossum, skunk, gray fox, coyote, domestic cat, sheep, ruffed grouse, sharp-tailed grouse, and quail. Rabbits should be handled with rubber gloves to reduce the chance of infection. Streptomycin is an effective remedy. Wild rabbits for restocking should be quarantined for at least 10 days before being liberated.

WILDLIFE (GENERAL)--FAUNAS & MANUALS

EDDY, SAUMUEL, and HODSON, ALEXANDER C. Taxonomic keys to the common animals of Minnesota exclusive of the parasitic worms, insects and birds. 114 pages. Burgess Publishing Co., 426 South Sixth Street, Minneapolis 15, Minnesota. 1947. $1.75.

"These taxonomic keys are prepared for the purpose of aiding in the identification of common animals, exclusive of those groups for which current taxonomic literature is already available or which would be too large to include in a brief set of keys." Beside the keys there is a 15-page bibliography which includes papers and monographs dealing with the habits and distribution of the animals of Minnesota and taxonomy in general.--M. Alberts

HATT, ROBERT T., and others. Island life: a study of the land vertebrates of the islands of eastern Lake Michigan. Cranbrook Institute of Science Bulletin 27. 179 pages, illus. 1948. $4.00.

This thorough study is based particularly on investigations by the Cranbrook Institute and the University of Michigan between 1937 and 1944. These aimed to determine both the geographic and the ecologic distribution of the islands' animals. The collecting of material was thorough. Observations of others over a period of 100 years are included. The principal subjects discussed are geological history, cultural history, descriptions of the individual islands, amphibians, reptiles, birds, mammals, modification of habits, and factors of distribution. The largest island is Beaver, with 58 square miles; the most isolated is South Fox, 16 miles offshore. Among the best established animals were toad; ring-neck and garter snakes; kingbird, tree swallow, crow, willow thrush, cedar waxwing, starling, ovenbird, redstart, redwing, and song sparrow; red fox, eastern chipmunk, woodland deermouse, and snowshoe hare. Raccoon, skunk, and white-tailed deer have been introduced. There is a detailed discussion of various factors of distribution that are responsible for the meagre faunas.

WILDLIFE (GENERAL)--HABITATS

FITTER, R. S. R. London's natural history. 282 pages, illus. Collins, Toronto. 1945. $4.50.

The author describes the way man has modified his original environment, and of how in spite of his intensive occupation of the London area he still is surrounded by a varied population of plants and animals, some of which have been there as long as he. Several chapters trace the growth of London; several others discuss prominent environmental influences: (1)digging for building materials, (2)trade and traffic, (3)water supply, (4)refuse disposal, (5)smoke, (6)food-getting, (7)sport. Man has exterminated much of the original life of the area and its place has been taken by his structures or by immigrant plants and animals. All of this is clearly pictured in words and with maps and many color and black and white photos. The book indicates quite well the urban environment of a large portion of the American people, as well as the British. Charles Elton reviewed it on page 95 of The Journal of Animal Ecology for May 1947.

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WILDLIFE (GENERAL)--MANAGEMENT

ANONYMOUS. Wisconsin conservation in review--1947. Wisconsin Conservation Bulletin 13(3): 10-25. March 1948.

This is a resume of the work and some of the problems of the State Conservation Department. Game management activities included the stocking of over 170,000 pheasants; establishment of new public hunting and refuge areas; survey of heavy damage by deer to forest reproduction; extensive surveys on the status of Wisconsin wildlife; and research on deer, muskrats, pheasants, quail, grouse, waterfowl, and foxes. Fish management activities included propagation; lake and stream surveys; several fish management projects; a creel census of Lake Mendota ice fishing; removal of over 6 million pounds of rough fish; and management of the Great Lakes fishery.

CURRAN, GEORGE A. Wisconsin's public hunting grounds. Wisconsin Conservation Bulletin 13(1): 23-32, illus. January 1948.

Posting of private lands, clean farming, and marsh drainage have greatly restricted public hunting in Wisconsin in the last 30 years. From 1943 to 1947 nearly 200,000 acres (31,000 purchased, the rest leased) were set aside as public hunting grounds. The areas are systematically chosen and administered. Protection is given the owners of leased areas. Habitat improvement is the first objective in the development of purchased areas. A list of over 60 areas in 33 counties gives their exact location and principal kinds of game.

DAVENPORT, L. A. Game counts can be made from the air. Michigan Conservation 17(1): 7,14, illus. January 1948.

The advantages, disadvantages, and technique of aerial censusing are discussed. Flights have been made to census small game, deer, elk, moose, and waterfowl. Aerial surveys are especially successful in waterfowl censusing. They are quicker, more accurate, and cheaper than the old ground survey methods.--M. Alberts

DUGUAY, JEAN. La cynégétique moderne. La Forêt Québécoise 13(1): 67-75, illus. January 1948.

A review of the basis for scientific wildlife management. The author discusses fundamental properties of animal populations, such as biotic potential, fluctuations in numbers, limiting factors, and reactions to changes in the environment. He cites specific examples for the deer, hare, grouse, and quail. Cover mapping, population inventories, edge effect, food and cover manipulation, predator control and refuges are treated briefly. Emphasis is given to the need for integrating wildlife management with forestry practices and for student training facilities in this field. --Durward L. Allen.

WILDLIFE (GENERAL)--MANAGEMENT

GABRIELSON, IRA N. Basic importance of good management of natural resources. The American Field 149(23): 716-717. June 5, 1948.

An address delivered at the fortieth annual convention of the League of Ohio Sportsmen, held March 20, 1948, in Columbus, Ohio. In it, Dr. Gabrielson points out two basic factors that affect all wildlife populations: (1) the constantly increasing human population of North America and (2) a constantly growing number of people who help harvest the annual crop of fish and game produced in a shrinking environment. He reviews the mistakes in some of the present wildlife management programs, and suggests ways of correcting them. The point is stressed that sportsmen's associations can be instrumental in promoting intelligent programs.--M. Alberts

GILLHAM, CHARLES E. Trouble in Alaska. Outdoors 16(5): 18-19, 56-57, illus. May 1948.

Alaska's game is seriously endangered by hunting pressure and predators. Only money and work will save it.

JOHNSON, FLOYD A. Upland game management. 80 pages, illus. Wildlife Management Institute, Investment Bldg., Washington 5, D. C. 1948.

In 4 chapters the author discusses "Why Wildlife Management is Necessary"; "Good Farming is Good Wildlife Management"; "Farmer-Sportsman Co-operation"; and "Predator Control." Among good farming and wildlife management practices he includes soil and moisture conservation, shelterbelts, fence-row management, stabilization of ravine and drainage ditch edges and stream banks, utilization of wet areas and odd corners, fire control, and pond development. Farmers and sportsmen can cooperate in surveying game and game areas and in food, water, and cover. The bulletin is well illustrated with photos, drawings, and maps.

LEEDY, DANIEL L. Aerial photographs, their interpretation and suggested uses in wildlife management. Journal of Wildlife Management 12(2): 191-210, illus. April 1948.

The author describes types of aerial photos, how they are made, the status of aerial photography in the United States, how to select photos for use in wildlife management, how and where to obtain them, and methods of studying and interpreting them. Aerial photos may be used as maps; for determining game range; for censusing big game, seals, muskrats, waterfowl, etc; for locating game refuge sites; in law enforcement; in the study of areas damaged by fires, floods, insects, or disease; in determining hunting pressure; and in various other ways. The discussion is helped by the inclusion of examples of aerial photos, the description of techniques, and the description of specific applications in wildlife management. There is a list of about 40 references.

WILDLIFE (GENERAL)--MORTALITY

FOSS, WILLIAM M. DDT. New York State Conservationist 2(6): 22-23, illus. June-July 1948.

"During the past three years the New York State Conservation Department has treated some 120,000 acres of forest land with DDT for the control of the gypsy moth and other forest insects. Dosages have been limited to one-half to one pound per acre and in all instances care has been exercised to avoid the direct application of the insecticide to streams inhabited by fish. Observations, carried on during and for a period of several weeks after application, failed to reveal any detrimental effects."

WILDLIFE (GENERAL)--POPULATIONS

VESEY-FITZGERALD, BRIAN. British game. 240 pages, illus. Collins, Toronto. 1946. $4.50.

This volume is beautifully illustrated with over 2 dozen colored reproductions of paintings, lithographs, etc. and many more large photographs. The text describes in detail the history, behavior, and value to man of 8 species of upland game birds; a variety of ducks, geese, and swans; 4 species of shorebirds; rabbit, hares, coot, and woodpigeon; and red, fallow, and roe deer. Quite a few of the species discussed occur also in North America. In a chapter dealing with "The Numbers of Wildfowl" there is emphasis on their world-wide reduction in numbers and the factors involved. A section on preservation has chapters on "The Enemies of Game", "The Gamekeeper", and "The Preservation of Game." The first of these has brief accounts of over 40 birds and mammals, many of which are not classed as enemies by the author. He rates the brown rat as the No. 1 enemy, with the fox second, and the gray squirrel perhaps third. Other serious enemies are wild cat, crows, and gulls.

MAMMALS--BIOGRAPHY & HISTORY

GRINNELL, WILDA W. Edmund Heller: 1875-1939. Journal of Mammalogy 28(3): 209-218, illus. August 1947.

Heller made trips for the study and collection of animals. As director of the Milwaukee and San Francisco zoos he greatly improved living conditions for their animals. The author cites 15 publications that relate to him, and more than 50 of his own.

MAMMALS--FAUNAS & MANUALS

INGLES, LLOYD GLENN. Mammals of California. 258 pages, illus. Stanford University Press, Stanford University, Calif. 1947. $4.00.

Numerous photographs make this book useful to beginners; a key and range maps help those who are more advanced to identify all the species of land mammals in the State. Most of the book is composed of interesting natural history accounts of one or more of the better known, more conspicuous species of each genus. Subspecies are not treated. The author emphasizes that the study of mammals requires a different approach from the study of birds. He tells how to collect them and prepare skins; and he suggests problems for study. There is a detailed index.

MAMMALS--FAUNAS & MANUALS--Continued

SOPER, J. DEWEY. Mammal notes from the Grand Prairie--Peace River region, Alberta. Journal of Mammalogy 29(1): 49-64, illus. February 1948.
The author made the investigation in 1944. He records distribution, measurements, and behavior for 42 species. The region described lies entirely within the Canadian life zone; and the vegetation is dominated by conifer, poplar, and birch forest, with scattered muskegs.

MAMMALS--BIG GAME (GENERAL)

COWAN, I. McT. The occurrence of the granular tape-worm Echinococcus granulosus in wild game in North America. Journal of Wildlife Management 12(1): 105-106. January 1948.
The author reviews published reports on the occurrence of hydatid disease in man and wild mammals. In addition to these occurrences he found cysts in the lungs of black-tailed deer on Vancouver Island and of elk and mule deer in Jasper and Banff National Parks. One wolf was infested with adult Echinococcus. There is some danger of human infestation in these parks.

SCHNEIDER, P. W. Game division program. Oregon State Game Commission Bulletin 3(5): 1,6-8, illus. May 1948.
Big game studies in Oregon involve antelope, 2 kinds of deer, and 2 kinds of elk. All big game habitat is being classified; and herd composition, annual harvest, and other data are being compiled. "The long range objective is to secure sufficient data to permit practical delineation of each big game herd range and to apply management on the basis of herd ranges." The program on upland game is similar to that on big game. Ringnecked pheasant and valley quail are the principal species being studied.

MAMMALS--BIG GAME (DEER)

ATWOOD, EARL L. A nutritional knowledge short cut. Journal of Wildlife Management 12(1): 1-8. January 1948.
The author made a preliminary study of the nutritive value of 14 white-tailed deer foods by means of feeding experiments with albino rats. This procedure eliminates all variables but the diet and greatly reduces time and expense. The number of experimental deer can be reduced to those needed for spot check tests.

DALKE, PAUL D. Deer foods in the Missouri Ozarks. Missouri Conservationist 8(9): 4-5, illus. September 1947.
220 known species of plants are eaten by deer in the Ozark region. Oak-hickory and oak-pine woodlands are the dominant plant associations of the region; and when there is a crop acorns are an important food. In summer and fall herbaceous plants are the main food; while in winter they are largely replaced by twigs from small trees, shrubs, and vines, particularly low-bush blueberry, dwarf sumac, New Jersey tea, sassafras, catbrier, and Ozark buckbrush (coralberry). Spring provides a variety of tender shoots and buds.--M. Alberts

MAMMALS--BIG GAME (DEER)--Continued

LAYCOCK, W. E. Looking ahead to the dear old days. Michigan Conservation 16(10): 5,12, illus. November 1947.

This is a discussion of deer starvation in the Gladwin Refuge (N. W. corner of Gladwin Co., Michigan). The deer population has been steadily increasing in this area, and deer are starving because it is becoming browsed out. Artifical feeding and cutting management programs have proved expensive and useless. "It seems that the practical way to handle the situation is to control the size of the herd and keep it at a level where the natural food will support it."--M. Alberts

MATSON, J. R. Cats kill deer. Journal of Mammalogy 29(1): 69-70. February 1948.

In recent years as many as 5 deer in 2 weeks have been found killed by bobcats in a single locality in Pennsylvania. The author states that bobcats live almost exclusively on deer in one locality. He describes instances of killing.

O'ROKE, E. C., and HAMERSTROM, F. N., JR. Productivity and yield of the George Reserve deer herd. Journal of Wildlife Management 12(1): 78-86. January 1948.

This herd of deer grew from 4 does and 2 bucks in 1928 to 160 animals in the fall of 1933. By that time the vegetation on this 1200-acre area was being drastically overused; so in January 1934 shooting of the deer was begun. Since that time 546 deer have been taken. The annual harvest has averaged about one-third of the winter population, which is now planned to be kept at 50-60. The authors describe the vegetation and other environmental conditions and give statistics on the population and its productivity and harvest. They conclude that the annual surplus from a herd of deer kept in an enclosure must be removed promptly if other losses are to be kept low; and that a deer herd under comparable range conditions should yield an annual harvest of about one-third of the winter population. "deer management also needs simpler census methods than the standard deer drive."

SWIFT, R. W. Deer select most nutritious forages. Journal of Wildlife Management 12(1): 109-110. January 1948.

White-tailed deer consistently grazed on young wheat and on clover in particular parts of fields in Centre Co., Pennsylvania. Wheat leaves and kernels and clover leaves were analyzed from the grazed and from ungrazed areas. There were scarcely any differences in the grain; but the grazed wheat and clover had more of most of the ingredients analyzed than did the ungrazed. The greater amounts of calcium, phosphorus, and ether were particularly significant.

MAMMALS--BIG GAME (ANTELOPE, BEAR, ETC.)

ANONYMOUS. Field crews complete 1948 antelop census. Wyoming Wild Life 12(4): 18-25, 35, 37, illus. April 1948.

A count of 65,000 antelope was based on observations made in 357 hours of flying time. 4 districts were flown simultaneously. A map shows the population by areas. This is an increase from about 5,000 animals in 1904. Careful control of the harvests are necessary if this large population is to be maintained.

BUECHNER, HELMUT K. The antelope situation. Texas Game and Fish 6(5): 5,12,17-18, illus. April 1948.

The Texas Cooperative Wildlife Unit carried on intensive research between June 1946 and September 1947 on antelope-livestock relations. It found that there was little competition between cattle and antelope, since antelope fed mostly on plants that were not eaten by cattle. Their principal food was a large variety of forbs and shrubs and only a few grasses. There are now about 6000 antelope in west Texas. It would be advantageous to both ranchers and sportsmen to increase this number and to have an annual harvest.

deVOS, A. Status of the woodland caribou in Ontario. Sylva 4(1): 17-23, illus. 1948.

"Only drastic protection measures, taken immediately can save the species from complete extermination in Ontario." The disappearance of caribou is attributed to settlement, lumbering, and fires, which destroyed their winter range, and to ruthless slaughter.

EINARSEN, ARTHUR S. The pronghorn antelope and its management. 238 pages, illus. Wildlife Management Institute, 822 Investment Bldg., Washington 5, D. C. $4.00.

This account is based mostly on the author's observations in southeastern Oregon between 1936 and 1944 and on those of other Oregonians. About half of the book describes the pronghorn's physical characteristics, behavior, food habits, disease and mortality, and life history. The other half deals with its distribution, relation to civilization, management, and hunting. Many specific observations and many photographs bring the pronghorn to life.

GLOVER, RICHARD. The wisent or European bison. Journal of Mammalogy 28(4): 333-342, November 1947.

Barely a hundred wisents were alive at the beginning of the last war. The Tsars game laws preserved them in the Forest of Bialowies and the Caucasus until after the first world war. Since then they have been kept from extinction mostly by the German's careful breeding. The author quotes from his own observations and those of others on the life history and behavior of this noble forest animal, and relates the interesting story of its preservation.

KENNEDY, CEIL A. Golden eagle kills bighorn lamb. Journal of Mammalogy 29(1): 68-69. February 1948.

In New Mexico, February 1947.

MAMMALS--GAME (ANTELOPE, BEAR, ETC.)--Continued

MURIE, ADOLPH. Cattle on grizzly bear range. Journal of Wildlife Management 12(1): 57-72, illus. January 1948.

The author studied bear predation on a range in Teton National Forest, Wyoming in 1945 and 1946. In 1945 there were 25 losses among 1648 cattle. 10 of these were attributed to grizzlies. In 1946 there were 24 losses, of which 11 were attributed to grizzlies. Most of the losses are described in detail. The author believes that a majority of the grizzlies take to killing cattle. Cattlemen, campers, sportsmen, and wildlife conservationists differ widely in their opinions on whether grizzlies should be preserved or destroyed.

MAMMALS--FURBEARERS (BEAVER)

BRADT, G. W. Michigan beaver management. 56 pages, illus. Michigan Department of Conservation, Lansing. 1947.

In 6 chapters the author discusses "History", "General Characteristics", "Population Studies", "Management", "Beaver Farming", and "Beaver vs. Trout Controversy." The chapter on population studies describes research methods, life history, behavior, and food. Management requires a method of censusing; measures of reproductive rate, mortality factors, and food supply; knowledge of the manner of dispersal; and means and authority for controlling the harvest by man. There are excellent, large photos and entertaining drawings.

PACKARD, FRED M. A survey of the beaver population of Rocky Mountain National Park, Colorado. Journal of Mammalogy 28(3): 219-227. August 1947.

The author made this survey in 1939 and 1940, using the methods of the state-wide Pittman-Robertson study. He tabulates the population, area by area, over the Park. Almost every stream able to support beaver was stocked to capacity, and the population was fairly stable. A number of colonies depended on willow rather than aspen. On the streams near Estes Park there was serious competition with deer and elk for food in winter. Beaver did some damage to nearby private property, mostly by flooding pasture land and clogging irrigation ditches.

SHANK, WENDELL G., and CLOVER, FRED L. Beaver censusing by airplane. Journal of Wildlife Management 12(2): 214. April 1948.

On a flight in April 1947 in West Virginia, 103 miles of stream with over 50 beaver colonies were covered in 45 minutes. The total cost was $21.50. It would have been practically impossible to census the area on foot. There are 2 sources of error in this kind of census: difficulty in determining the number of colonies where a stream has many dams close together, and failure to determine the number of bank beaver. A fall census would be more satisfactory than a spring census. For safety in rough country a plane should have plenty of power.

MAMMALS--FURBEARERS (MUSKRAT & NUTRIA)
(See also BIRDS--WATERFOWL, Smith)

ANDERSON, JOHN M. Sex ratio and weights of southwestern Lake Erie muskrats. Journal of Mammalogy 28(4): 391-395. November 1947.

2800 acres of marsh of Sandusky Bay, Ohio were trapped by 11 trappers from December 10, 1945 to March 15, 1946. Over 10,000 muskrats were taken--124 males to 100 females. Males taken during the last 2 weeks of the season averaged 2.4 pounds; females averaged 2.26 pounds.

ANDERSON, WALLACE L. Level ditching to improve muskrat marshes. Journal of Wildlife Management 12(2): 172-176. April 1948.

"The study of three Wisconsin marshes, in which the owners had constructed level ditches between 1938 and 1940 demonstrated that on peat and muck marshes having low water levels (0.5 feet in winter) in eastcentral Wisconsin, level ditching on less than 25 per cent of the total marsh area resulted in:

"(a) An increase of 2.5, or 192 per cent in the number of muskrats caught per acre per year.

"(b) An increase of $3.05, or 259 per cent in the net return per acre per year.

"(c) An increase of 97 per cent in the rate of interest earned on capital investment in spite of an increase of 54 per cent in the amount of capital invested.

"(d) An increase of $1.06, or 23 per cent in the return per hour of labor spent in trapping, skinning, stretching and fleshing muskrats."

ASBROOK, FRANK G. Nutrias grow in United States. Journal of Wildlife Management 12(1): 87-95, illus. January 1948.

The author reviews the depletion of nutria in Argentina in the last half of the nineteenth century; and their later production in captivity in Europe, South America, and North America. Nutria farming did not prove profitable and by 1940 only few farms remained. In the United States nutria have been released or escaped from farms in Washington, Louisiana, New Mexico, and elsewhere. Now they are pretty well established in Washington, Louisiana, and Texas. The author describes appearance, behavior, feeding habits, reproduction, trapping, and use as food. Nutria are strictly herbivorous. They should thrive in any good muskrat habitat.

DOZIER, HERBERT L. Estimating muskrat populations by house counts. U.S.D.I. Fish and Wildlife Service, Wildlife Leaflet 306. 17 pages, illus. June 1948.

Muskrat populations may be estimated accurately by year to year counts of occupied dwelling houses and consideration of the number of bank muskrats. Population figures have been based on an estimate of 5 animals to each large house. The average litter size of each race would be a better figure; and a still better one would consider the survival rate. Proper harvesting calls for distinguishing between dwelling houses and feeding huts.

MAMMALS--FURBEARERS (MUSKRAT & NUTRIA)--Continued

DOZIER, HERBERT L., MARKLEY, MERLE H., and LLEWELLYN, LEONARD M. Muskrat investigations on the Blackwater National Wildlife Refuge, Maryland, 1941-1945. Journal of Wildlife Management 12(2): 177-190, illus. April 1948.

Data are given on 5 years controlled trapping operations on a 5,233-acre tidal marsh area in Dorchester Co., Maryland. Of 23,539 muskrats examined, 13,421(57%) were males, a sex ratio of 133:100. Two distinct color phases occurred, of which 52% were black-and-tan and 48% brown. Males averaged 2.4 ounces heavier than females. Average weights of the total catch varied little from year to year. Weights increased progressively from January 1 to February 15, followed by a rapid decline. More animals were trapped during January; but best prime pelts were taken during the latter half of February.. A discussion of suggested management principles is given.--Merle H. Markley.

MARSH, D. B. Ratting in the delta. The Beaver 278: 32-35, illus. March 1948.

The author describes the taking of muskrats in the Yukon delta. Beginning March 1 they are trapped at their push-ups in the lakes. Later, when the river is in flood, they are shot. The carcasses are used for food. The average annual value of the fur is nearly one-half million dollars.

RICHMOND, NEIL D. The scarcity of muskrats in Northwestern Pennsylvania. Pennsylvania Game News 18(10): 11,31, illus. January 1948.

A recent study of muskrat populations lead to the conclusion that floods and droughts are responsible for decrease in numbers. Floods may drive the muskrat from its home and droughts may cause a serious food shortage. --M. Alberts

RIDER, CAROL, and MACY, RALPH W. Preliminary survey of the helminth parasites of muskrats in northwestern Oregon, with description of Hymenolepis ondatrae n. sp. Transactions of the American Microscopical Society 66(2): 176-181, illus. April 1947.

"A preliminary survey of the helminth parasites of muskrats in the region of Scappoose, Oregon, has been made. The following parasites have been shown to be quite common in these hosts. Echinostoma revolutum, Notocotylus urbanensis, Hymenolepis ondatrae and Taenia taeniaeformis. A nematode of the genus Trichostrongylus? was found in three instances. A complete description is given of Hymenolepis ondatrae, which was ascertained to be a new species."--M. Alberts

SHOMON, JOSEPH J. Bonanza from the marshes. Hunting and Fishing 25(3): 44-45, illus. March 1948.

It is estimated that 8,000,000 muskrats will be caught by trappers during the coming winter. These factors have made the muskrat the backbone of the modern fur industry: (1) splendid appearance and fairly durable; (2) can be made to imitate other furs; (3) the supply seems inexhaustible. Production and yield are increasing, and with judicious management the muskrat can be a highly profitable resource.--M. Alberts

MAMMALS--FURBEARERS (RACCOON, FOXES, ETC.)
(See also MAMMALS--BIG GAME (DEER), Watson; MAMMALS--RODENTS (MICE, ETC.), Spencer; and MAMMALS--RODENTS (SQUIRRELS), Leedy)

CROSS, WILFRED D. The ecology and management of the prairie spotted skunk in Iowa. Ecological Monographs 18(2):201-232, illus. April 1948.

This investigation was made between March 1939 and June 1942 on a 17½-square-mile tract in Van Buren County, southeastern Iowa. The prairie spotted skunk occurs throughout the State. The author published on the skunk's food habits in the Journal of Mammalogy in 1941. The present article reports on trapping technique, life history, behavior, ecology, and management. There were many dens, none of which was the property of a single skunk. Most of the dens were in and about farm yards. In winter the average individual used 2 or 3 dens on a quarter section of land. In spring the living space of females was about the same, while that of males increased to 2-4 sections. The population density on 4 sections that were intensively trapped in the winter and spring of 1942 was 13 per square mile. 65% of the farmers on the area had spotted skunks about their yards between June 1941 and June 1942. About one-third had had trouble with them (half of all killed were killed for being a nuisance or preying on poultry): half were apathetic toward them. In some instances spotted skunks seemed to account for the absence of rats; in other both lived near one another.

FITCH, HENRY S. A study of coyote relationships on cattle range. Journal of Wildlife Management 12(1): 73-78. January 1948.

More than 1100 coyote scats were collected on the San Joaquin Experimental Range between 1939 and 1941. The author lists and gives the number of occurrences of each identified item. Seasonal changes in food were slight. In 1935 the coyote population on the area was high. Since then control greatly reduced it, but this had no evident effect on populations of the main food species (ground squirrel, cottontail, kangaroo rat, and gopher). "Relations with range cattle are generally harmonious, but individual coyotes, which learn to kill small calves, may cause serious damage at times."

GIER, H. T. Rabies in the wild. Journal of Wildlife Management 12(2): 142-153. April 1948.

Epizootics of rabies have occurred in various parts of the United States in foxes, wolves, skunks, coyotes, and other carnivores. A current epizootic extends from New York southwestward through the Allegheny Plateau and west to Arkansas and Louisiana. Foxes are the primary carriers in much of this area. Except in New York, Alabama, and Georgia there is an accompanying epizootic in dogs. Rabies is common in gray foxes in southeastern Ohio. Loss of livestock from rabies has been high there for the past 2 years and some of it is due to foxes. In order to control rabies in wild animals there must be control in dogs. In addition, overpopulation must be prevented or eliminated.

MAMMALS--FURBEARERS (RACCOON, FOXES, ETC.)--Continued
(See also MAMMALS--BIG GAME (DEER), Matson; MAMMALS--RODENTS (MICE, ETC.), Spencer; and MAMMALS--RODENTS (SQUIRRELS), Leedy)

OLIVE, JOHN R., and MILEY, CHARLES V. Sarcoptic mange in the red fox in Ohio. Journal of Mammalogy 29(1): 73-74, illus. February 1948.
"From July to November of 1946 severe cases of mange were observed in ten dead or dying red foxes (Vulpes fulva) in Tuscarawas County, Ohio." 3 foxes were examined and were found to be heavily parasitized with the mange mite, Sarcoptes scabei. One of these had gastroenteritis and contained over 200 roundworms of 2 species. Malnutrition was indicated in all the mangy foxes--probably due to the effect of the mites. The red fox population was exceedingly high at the time.

QUORTRUP, E. R. Here's a practical way to identify your mink. Black Fox Magazine 31(2): 19,34. June 1947.
A marking method is described for permanent identification of minks. The system used is that of electric tattooing of the foot pads with black India ink. Diagrams show the sequence of numbering. Pads on the front feet are used to designate the animal number, while hind foot pads are used to indicate the year of birth. This method may have application in the identification of live-trapped wild animals.--Merle H. Markley.

REITZ, J. H. Symptoms of rabies in foxes. Black Fox Magazine 31(10): 16,25-26. February 1948.
A discussion of case histories of rabid wild gray and red foxes examined during an outbreak of this disease in northern West Virginia. The one outstanding and constant symptom was a change in behavior or disposition. Rabid foxes were fearless and aggressive and showed a tendency to attack. Any fox that exhibits a change markedly different from the normal, retiring behavior should be considered a rabies suspect.--Merle H. Markley.

SAMPSON, FRANK W., and BENNITT, RUDOLF. Ways and means in wolf-coyote-bobcat control. Missouri Conservationist 8(12): 4-5,6, illus.: and 9(1): 4-5, illus. December 1947 and January 1948.
Predators that cause the most damage for Missouri farmers are wolf, coyote, and bobcat. 4 methods of control have been in use since 1936: (1) the bounty system, (2) the work of professional government trappers, (3) the work of a state hunter with dogs, (4) the work of farmers trained by professional extension trappers. The activities of each are discussed. There is no evidence that the bounty system reduces the population of wolves and coyotes. The extension-trapper system seems to be the most effective and cheapest control measure. --F. Alberts

SCOTT, THOS, G. Comparative analysis of red fox feeding trends on two central Iowa areas. Iowa Agricultural Experiment Station Research Bulletin 353. pages 425-487, illus. August 1947.
This study was made in Wright and Boone Counties in 1940 and 1941. "In general, the feeding of the red foxes appeared to adjust automatically to the relative availability of acceptable foods within their immediate range of familiarity." Meadow mice, young cottontails, storm-killed birds and mammals, and drouth-exposed muskrats were highly acceptable foods. There was little predation on pheasant eggs and young pheasants.

MAMMALS--FURBEARERS (RACCOON, FOXES, ETC.)--Continued
(See also MAMMALS--BIG GAME (DEER), Matson; MAMMALS-- (MICE, ETC.), Spencer; and MAMMALS--RODENTS (SQUIRRELS), Leedy)

TEVIS, LLOYD, JR. Summer activity of California raccoons. Journal of Mammalogy 28(4): 323-332. November 1947.
The author watched raccoons in the Santa Lucia Mountains with binoculars and flashlight during the midsummers of 1945 and 1946. They fed largely on crayfish and Eastwood manzanita. They were disturbed by sounds but not by the light. Most of them were intolerant of each other. Young were following their mothers in August.

WRIGHT, PHILIP L. The sexual cycle of the male long-tailed weasel (Mustela frenata). Journal of Mammalogy 28(4): 343-352, illus. November 1947.
Most of about 80 male weasels reported upon were taken in western Montana. One litter is born each year, commonly in April. The young male does not become sexually mature the first summer. Adult males are sexually active from March to July.

MAMMALS--RODENTS (DOMESTIC RAT)

ANONYMOUS. Rat-control methods. U. S. D. I., Fish and Wildlife Service Circular 13. 16 pages, illus. 1948. 5¢ from Government Printing Office.
"Permanent control is the only satisfactory solution of the rat problem... ..Any program, to be successful, must incorporate these four major phases of control: Destruction of rats, elimination of rat harborages, elimination of food supply for rats, and rat-proofing of buildings. Furthermore, such a program should receive attention at all times of the year....." The circular describes the use of poisons, poisonous gases, and traps; the removal of rat harborages; ratproofing; and general sanitation.

CALHOUN, JOHN B. Mortality and movement of brown rats (Rattus norvegicus) in artificially supersaturated populations. Journal of Wildlife Management 12(2): 167-172, illus. April 1948.
Alien brown rats were introduced into stable populations in single city blocks. "No marked resident rats left their native block." ".....part of the alien rats became incorporated into the existing population", but many left. There was high mortality among both residents and aliens shortly after the release of the aliens. Alien mortality within 3 months was 3 times that of residents. In spite of the temporary increase in population the resident rats kept to their original ranges.

DAVIS, DAVID E. Notes on commensal rats in Lavaca County, Texas. Journal of Mammalogy 28(3): 241-244. August 1947.
The principal species observed in this recent study was the roof rat. It occurred in all towns and on farms. It breeds throughout the year.

MAMMALS--RODENTS (DOMESTIC RAT)--Continued

DAVIS, DAVID E. Observations on rats and typhus fever in San Antonio, Texas. Public Health Reports 63(24): 783-790. June 11, 1948.

These observations were made from May 1944 to September 1945. Roof rats and brown rats occur in San Antonio in about equal numbers but appear to live apart from one another. Reproduction occurs throughout the year but has a maximum in May and June. One-third of adult roof rats and one-half of adult brown rats were positive for typhus complement fixing antibodies. Antibodies were present in a higher percentage from grain mills than from stores or residences.

DAVIS, DAVID E., and EMLEN, JOHN T., JR. The placental scar as a measure of fertility in rats. Journal of Wildlife Management 12(2): 162-166. April 1948.

Placental scars did not occur in virgin laboratory rats or wild brown rats. They were persistent in all parous rats, but their number was not an indicator of the number of young produced. Large wild-trapped rats had more placental scars than small rats. Brown rats from San Antonio started breeding at a smaller size than brown rats from Baltimore.

EMLEN, JOHN T., JR., STOKES, ALLEN W., and WINSOR, CHARLES P. The rate of recovery of decimated populations of brown rats in nature. Ecology 29(2): 133-145, illus. April 1948.

The authors report upon work done in Baltimore, Maryland between July 1944 and July 1946. It concerned the rate of increase of 23 free-living populations of brown rats that were distributed among 4 public markets and 34 residential blocks. These populations were reduced by intensive trapping or single applications of poison. Population levels before reduction and during recovery were determined by a combination of techniques that included a standard counting procedure, mapping fresh signs, measuring bait consumption, and questioning people. Populations reduced 50-90% recovered at a rate of about 4% of their original levels each month.

IRONS, J. V., MURPHY, J. N., JR., and DAVIS, DAVID E. The distribution of endemic typhus in rats in Lavaca County, Texas. Public Health Reports 63(21): 692-694. May 21, 1948.

94% of 70 urban establishments harbored rats with positive tests (61% of 472 Rattus rattus and 69% of 36 Rattus norvegicus). 77% of 203 farms or semirural establishments harbored rats with positive tests (44% of 528 rats). Farms must be included in control activities.

MAMMALS--RODENTS (SQUIRRELS)

ALLEN, JOHN M. Mast production--a key to squirrel crops. Outdoor Indiana 14(5): 18. August 1947.

The quantity and quality of a nut and acorn crop directly influence squirrel population. Normal breeding requires a bountiful food supply and therefore it is obvious that a year of poor mast will result in few litters. Such situations can be remedied to some extent by formulation hunting laws which will conform to biotic laws. Since abnormal breeding seasons can be revealed as far ahead as 20 months by observing flowers of the black oak group, hunting laws can be made accordingly.--M. Alberts

MAMMALS--RODENTS (SQUIRRELS)--Continued

COOLEY, MARVIN E. Improved toe-tag for marking fox squirrels. Journal of Wildlife Management 12(2): 213. April 1948.

A circular band of monel metal is applied like a bird band to the inner toe of a hind foot. No infection or loss of toe has been noted from the use of this tag at the Rose Lake Wildlife Experiment Station in Michigan.

DAIKE, PAUL D. Some observations on den trees in the Missouri Ozarks. Journal of Wildlife Management 12(1): 107-109. January 1948.

A survey of den trees available to squirrels was made on 5% of 7200 acres on Deer Run State Forest in the winter of 1939. They occurred in white, scarlet, post, and black oaks, black gum, hickory, and shortleaf pine; but the total number was too few to provide good year-round squirrel habitat. "The heavy cutting of Missouri's privately owned oak forests during the war years has rendered thousands of acres uninhabitable for squirrels during the breeding season."

JORDAN, JAMES S. A midsummer study of the southern flying squirrel. Journal of Mammalogy 29(1): 44-48. February 1948.

In July and August 1946, 32 flying squirrels were live-trapped in a woodlot near Ann Arbor, Michigan. Their density was about 1 to an acre and their cruising radius was small. There were 13 juveniles to 19 adults.

LEEDY, DANIEL L. Spermophiles and badgers move eastward in Ohio. Journal of Mammalogy 28(3): 290-292. August 1947.

Both appeared in Knox Co., Ohio between 1942 and 1945--the spermophile in some abundance. It has been moving northeastward in central Ohio for the past 10 years.

SCHORGER, A. W. An emigration of squirrels in Wisconsin. Journal of Mammalogy 28(4): 401-403. November 1947.

Both gray and fox squirrels were on the move in large numbers in northwestern Wisconsin in the fall of 1946. The movement was generally agreed to be caused by a shortage of acorns, but most of the squirrels seen were in good condition. Many drowned or were killed by autos.

MAMMALS--RODENTS (MICE, ETC.)
(See also BIRDS--HAWKS & OWLS, Odum)

EADIE, W. ROBERT. Shrew-mouse predation during low mouse abundance. Journal of Mammalogy 29(1): 35-37. February 1948.

Field mice ".....formed a significant portion of the diet of short-tailed shrews in open field habitats during a winter of low mouse abundance as well as in a 'peak' year of abundance as previously recorded." Among other things, the author describes the method of collecting scats used in this study at Ithaca, New York in the winter of 1933-34.

MAMMALS--RODENTS (MICE, ETC.)--Continued
(See also BIRDS--HAWKS & OWLS, Odum)

FITCH, HENRY S. Habits and economic relationships of the Tulare kangaroo rat. Journal of Mammalogy 29(1): 5-35, illus. February 1948.

In the Sacramento and San Joaquin valleys and adjacent foothills this kangaroo rat, Dipodomys heermanni, is an important competitor with grazing livestock for the sparse annual vegetation. The author and others investigated its ecology at the San Joaquin Experimental Range from 1938 to 1942 and again in 1946. He describes habitat, burrows, feeding, baits, and population dynamics (in detail). Soft chess was the most important food. Food was stored on only a small scale. Much more forage was lost than was eaten. The population increased in dry years; dropped in years of heavy and prolonged rainfall. There are many enemies: rattlesnake, horned owl, coyote, gray fox, barn owl, gopher snake, red-tailed hawk. Road counts at night were useful in comparing population densities. Breeding extended over most of the year. Most individual ranges appeared to have a radius of less than 100 feet.

GILMORE, RAYMOND M. Cyclic behavior and economic importance of the rata-muca(Oryzomys) in Peru. Journal of Mammalogy 28(3): 231-241, illus. August 1947.

In early 1944 in south coastal Peru there was a sudden high increase in this wild rat which lives in groves and thickets on the edges of fields. It did a great deal of damage to crops but was not a demonstrated carrier of disease. Control was difficult.

JAMESON, E. W., JR. Natural history of the prairie vole(Mammalian genus Microtus). University of Kansas Publications, Museum of Natural History 1(7): 125-151, illus. October 6, 1947.

More than 500 specimens of Microtus ochrogaster were examined in the flesh in northeastern Kansas between October 1945 and August 1946. During the same period 40 free-living voles were examined 157 times. In summer they lived in grass, clover, and alfalfa areas. Their principal foods were succulent plants. They cached food (2 gallons in one instance). 9 other species of small mammals occurred in the same habitat and frequently used the vole runways. Each of 15 nests found was underground. 58 gravid females had an average of 3.4 embryos. Reproduction stopped only in December and January. External parasites included 6 kinds of fleas, 1 louse, 2 mites, and 2 ticks.

MILLER, MILTON A. Seasonal trends in burrowing of pocket gophers (Thomomys). Journal of Mammalogy 29(1): 38-44, illus. February 1948.

"Weekly records of new pocket gopher work, of soil temperature, and of soil moisture were taken for a year from a half-acre plot in an uncultivated field at Davis, California,....." Little burrowing occurred when the soil was dry, and only a moderate amount when it was very wet. The rate of digging was highest in spring. Control is most efficient in the Sacramento valley just after the first heavy autumn rains.

MAMMALS--RODENTS (MICE, ETC.--Continued
(See also BIRDS--HAWKS & OWLS, Odum)

SPENCER, DONALD A. An electric fence for use in checking porcupine and other mammalian crop depredations. Journal of Wildlife Management 12(1): 110-111. January 1948.

For porcupines, 18-inch poultry or hog netting is necessary, with a charged wire level with and never more than 1½ inches from the top of the netting. A wider netting trenched into the soil about 6 inches is needed to keep out coons, foxes, and skunks.

STICKEL, LUCILLE F. Effect of bait in live trapping Peromyscus. Journal of Wildlife Management 12(2): 211-212. April 1948.

Evidence from live-trapping tests at the Patuxent Research Refuge, Maryland showed that Peromyscus leucopus did not leave their home ranges because of the attraction of trap bait in nearby areas, although bait was necessary for efficient trapping.--Lucille F. Stickel.

STICKEL, LUCILLE F. The trap line as a measure of small mammal populations. Journal of Widlife Management 12(2): 153-161, illus. April 1948.

Field studies of Peromyscus leucopus populations at the Patuxent Research Refuge Maryland showed that the mice ranged more widely in upland than in bottomland woods. The numbers of mice captured on trap lines in the two habitats were therefore disproportionate. Published reports showing range size variation are discussed. It is concluded that lines of traps are not fully reliable means of measuring relative abundance.--Lucille F. Stickel.

MAMMALS--RABBITS

MOORE, EUGENIA R., and MOORE, GEORGE C. The helminth parasites of cottontail rabbits in Alabama, with notes on the arthropod Linguatula serrata. Journal of Mammalogy 28(3): 279-284, illus. August 1947.

12 species of parasites were found in 50 cottontails (Sylvilagus floridanus) collected at Auburn, Albama. Each of 6 species of parasites occurred in more than one-third of the cottontails.

ROWE, KENNETH C. Rabbits--a million dollar crop. Missouri Conservationist 9(3): 13-14, illus. March 1948.

The sale of about 2 million cottontail rabbits nets an annual income of over a million dollars. Another 2 million provide Missourians with a low-cost food. In spite of this enormous take, it is estimated that there are 10 million rabbits in Missouri at the beginning of the breeding season in a normal year. "The important thing is the fact that rabbit populations respond directly to land-use practices, and here, man decides the fate of the species." "Rabbits can be maintained by wise land management."
--M. Alberts

MAMMALS--INSECT-EATERS
(See MAMMALS--RODENTS (MICE, ETC.), Eadie)

MAMMALS--MARINE

SCHEFFER, VICTOR B. Use of fur-seal carcasses by natives of the Pribilof Islands, Alaska. Pacific Northwest Quarterly 39(2): 131-132, illus. April 1948.
The author obtained information in 1945 on the names and uses of the parts of fur seals. The economy of the natives has for generations been closely linked with the welfare of the fur seals. Lists are given of the parts used as food, for ornamentation, and those retained for later sale.--Merle H. Markley.

BIRDS--BEHAVIOR

GREEN, ROLAND. Wing tips. 64 pages, illus. The Macmillan Co., New York. 1948. $1.75.
A small book, with numerous black and white illustrations by the author, describing wing movement and the flight of birds. This is not a technical book but an excellent introduction for the ordinary bird-lover who wants to know more about bird flight.--M. Alberts.

BIRDS--COMMUNITIES

KENDEIGH, S.CHARLES. Bird populations and biotic communities in northern lower Michigan. Ecology 29(1): 101-114. January 1948.
Studies were made at the University of Michigan Biological Station of the niche requirements of birds. There are two tables: one showing the composition and size of bird populations in various plant communities and the other showing the correlation between birds and plant communities. It was found that "An analysis of the bird composition in respect to communities represented gives almost as clear a picture of the character of the vegetation as if the plant community were directly analyzed in structure and life-form."--M. Alberts.

BIRDS--DISEASES

RAUSCH, ROBERTS, and MORGAN, BANNER BILL. The genus Anonchotaenia (Cestodia:Dilepididae) from North American birds, with the description of a new species. Transactions of the American Microscopical Society 66(2): 203-211, illus. April 1947.
This paper briefly reviews the literature on Cestodes of the genus Anonchotaenia Cohn, with special reference to North American forms. There is a description of a new species, A. quiscali; as well as a key to the 15 valid species and a parasite-host list of the genus. The host list includes about 18 different species of North American birds.--M. Alberts

BIRDS--FAUNAS & MANUALS

BAILLIE, JAMES L., JR., and HOPE, CLIFFORD E. The summer birds of Sudbury District, Ontario. Contributions of the Royal Ontario Museum of Zoology No. 28. 32 pages, illus. 1947. 25¢.
This report is based on field work by the authors in the summer of 1937. It lists 130 species, including 6 ducks, 9 hawks 3 grouse, and 5 shorebirds.

BIRDS--FAUNAS & MANUALS--Continued

McLAUGHLIN, VINCENT P., JR. Birds in an army camp. The Auk 65(2): 180-188. April 1948.

At Camp Barkeley, in southwestern Taylor Co., Texas the habitat was changed from a semidesert with very little birdlife to one with abundant birdlife along a series of settling pools where the camp sewage was disposed of. The cool, quiet pools with willow-bordered embankments offered a haven which the birds quickly took advantage of; and the list of species was increased many times over that of the surrounding country.--John W. Aldrich

BIRDS--MANAGEMENT

LINCOLN, FREDERICK C. Manual for bird banders. U. S. D. I., Fish and Wildlife Service. 116 pages, illus. 1947.

This limited edition is an abridgment, with corrections, of the manual by Frederick C. Lincoln and S. Prentiss Baldwin that was published in 1929 as U. S Department of Agriculture Miscellaneous Publication 58.

BIRDS--WATERFOWL
(See also BIRDS--FISH-EATERS, Cottam)

ANONYMOUS. The migrant wings turn north. Wyoming Wild Life 12(1-2): 4-11, 34-36, illus. January-February 1948.

This article reports on the increase of Canada geese in the vicinity of Hawk Springs Reservoir, southeastern Wyoming, since 1940.

ANONYMOUS. More rare trumpeter swans observed in Alaska. Modern Game Breeding 18(4): 6. April 1948.

This is a brief account of the status of the trumpeter swan in both the States and Alaska. In Alaska, wintering flocks total nearly 300 and it is believed that they breed there.--M. Alberts

COULTER, MALCOLM W. Triangle spike rush as waterfowl food. The Auk 65(1): 132-133. Jan. 1948.

Field observations and stomach analyses of Maine black ducks, together with a few wood ducks and ring-necked ducks, showed a high percentage of diet composed of triangle spike rush (Eleocharis robbinsii).--John W. Aldrich.

FRANK, WILLIAM JOHN. Wood duck nesting box usage in Connecticut. Journal of Wildlife Management 12(2): 128-136. April 1948.

"A study of the usage of wood duck nesting boxes in Connecticut was conducted on the Litchfield-Morris Wildlife Sanctuary from 1941 to 1946, inclusive..... Gray squirrels and wasps or hornets were the most frequent occupants of the boxes and usage by other species was slight. As a management practice to increase the number of wood ducks on the sanctuary the boxes were a failure, despite the fact that wood ducks were a common summer resident."

BIRDS--WATERFOWL--Continued
(See also BIRDS--FISH-EATERS, Cottam)

GILLHAM, CHARLES E. Don't blame the Eskimos. Field & Stream 52(12): 48-49,151-154, illus. April 1948.

The moderate kill by Eskimos and Indians and the big kill by glaucous gulls, jaegers, and other predators are not responsible for a currently low population of waterfowl in Alaska. "Conditions on the vast waterfowl nesting grounds of Alaska are excellent, and always have been. They can accommodate as many birds as we can send north."

GRIEM, WILLIAM C., and SICKLES, RAYMOND M. The geese of Pymatuning. Pennsylvania Game News 18(12): 3,22,31, illus. March 1948.

In the early 1930's the Pymatuning Reservoir was established on an extensive bog and swamp area near the headwaters of the Shenango River in northwestern Pennsylvania. A dam built across the reservoir maintains a relatively constant water level in the upper portion of the reservoir. On August 27, 1936, thirty pinioned geese were released in this upper refuge area. Since then there has been a steady increase in numbers. During the 1947-1948 season an estimated 750 birds wintered at the refuge. The geese are no longer confined to Pymatuning but have spread to neighboring Conneaut Lake, Conneaut Marsh, Smith Marsh, Hartstown, the main portion of Pymatuning Lake, and islands near the Jamestown dam site.--M. Alberts

LAGLER, KARL F. and WIENERT, CATHERINE C. Food of the old-squaw in Lake Michigan. The Wilson Bulletin 60(2): 118. June 1948.

Heaviest take of old-squaws caught in fish nets are in those set in from 8 to 16 fathoms. The stomach contents of 36 of these ducks were composed almost entirely of a small bivalve, Pisidium sp., and a deep-water crustacean, Pontoporeia hoyi, with a small number of other aquatic organisms. The 2 most numerous organisms in the diet normally have a deep-water distribution, reaching their greatest abundance in depths less than 60 meters.--John W. Aldrich.

MILLER, HERBERT J., and WHITLOCK, S. C. Detroit river ducks suffer heavy losses. Michigan Conservation 17(4): 11,15, illus. April 1948.

It was estimated that due to industrial wastes in the Detroit River, 10,000 ducks were killed by chilling and starvation in January and February 1948. Oil caused the greatest loss.--M. Alberts

MUSSELMAN, T. E. A changing nesting habitat of the wood duck. The Auk 65(2): 197-203. April 1948.

Recently, increasing numbers of wood ducks have deserted the river-bottom swamps along the Illinois and Mississippi Rivers and taken up nesting sites in the very hearts of river towns. Individuals nesting within towns were notably unsuccessful in rearing their young.--John W. Aldrich.

PITELKA, FRANK A. Notes on the distribution and taxonomy of Mexican game birds. The Condor 50(3): 113-123. May-June 1948.

Records of extension of range as well as notes on geographic variation in Mexico of both upland gamebirds and waterfowl, including a number of North American species: white-fronted goose, mallard, blue-winged teal, shoveller, canvas-back, lesser scaup duck, ruddy duck, Wilson's snipe, red-billed pigeon, and mourning dove.--John W. Aldrich.

BIRDS--WATERFOWL--Continued
(See also BIRDS--FISH-EATERS, Cottam)

REID, VINCENT H. Lead shot in Minnesota waterfowl. Journal of Wildlife Management 12(2): 123-127. April 1948.

Gizzards from 16 species of ducks were collected in 62 localities. Of more than 1000 gizzards examined, 9% contained lead shot. 1% of the total contained a lethal dose. Diving ducks had taken more shot than puddle ducks, local ducks more than migrants. Not enough is known of the effect on survival and breeding potential of sub-lethal doses. Increased hunting on Canadian and western lakes may increase the importance of lead poisoning.

SMITH, DONALD. A report on Swan Lake, Nicollet County, Minnesota. The Flicker 20(1): 1-12, illus. March 1948.

For many years Swan Lake has been an outstanding producer of waterfowl and muskrats. It now has an area of nearly 11,000 acres and an average depth of about 3 feet. The drainage basin of about 33,000 acres is insufficient ot maintain it during such drought periods as that of the 1930'S. The estimated production of ducks in 1947 was more than 17,000 birds of 5 species; while more than 80,000 were believed to have used the lake that fall. In October 1946, more than 4000 muskrat houses were counted from the air. Since the lake refilled, vegetation has been abundant but of not as great food value to waterfowl and muskrats as before the drought. Apparently it is changing for the better. If carp can be kept out and wild celery and wild rice planted, it will improve still more. The author recommends plugging ditches to keep out carp, fencing cattle off the shores, and maintaining a minimum of 3 square miles of water in drought periods by pumping water from deep wells.

STENSON, LOWELL E. Guide to the waterfowl of Colorado. University of Colorado Museum Leaflet No. 4. 20 pages, illus. September 1947. 15¢ plus postage.

Drawings of the species in the air and on the water help to explain the characters used in the keys and descriptions. Cormorants, loons, grebes, coot, and white pelican are contrasted with waterfowl.

ZIMMERMAN, F. R. The 1947 waterfowl season in Wisconsin. Wisconsin Conservation Bulletin 13(5): 26-28, illus. May 1948.

There was a light kill in the fall of 1947. Compared with the 1946 fall flight, there were fewer mallards, blacks, gadwalls, pintails, ringnecks, and goldeneyes. Most other species were commoner than in 1946.

BIRDS--FISH-EATERS

COTTAM, CLARENCE. Unusual consumption of fish by three species of birds. The Wilson Bulletin 60(2): 117-118. June 1948.

2 greater yellow-legs, 3 blue-winged teal, and 2 Franklin's gulls were noted swimming in the water below the spillway of a dam on the Upper Souris National Wildlife Refuge in North Dakota, on September 7, 1947, and feeding voraciously upon small chubs, shiners, and sticklebacks. The observation was cited as an example of unusual feeding habits occasioned by unusual availability of a certain type of food.--John W. Aldrich.

BIRD--FISH-EATERS--Continued

GIBSON-HILL, C. A. British sea birds. 144 pages, illus. H. F. & G. Witherby Ltd., 5 Warwick Court, London, W. C. 1, 1947. 18 shillings.

This book is made beautiful by many large photographs and by large, clear type and the author's maps and sketches. All of the photos were taken by the author in 1946. There are biographies of the 24 sea birds that breed regularly in the British Isles. About half of these are biographies of the 24 sea birds that breed regularly in the British Isles. About half of these are North American, as well.

TWOMEY, ARTHUR C. California gulls and exotic eggs. The Condor 50(3): 97-100. May-June 1948.

In a large colony of 6 to 7 thousand pairs of California gulls, adult gulls were observed disgorging whole eggs of other birds which were immediately broken and eaten by both adult and young gulls. Eggs brought in were mostly cinnamon teal, ring-necked pheasant, coot, black-necked stilt, and eared grebe. 15 eggs in all were seen. In two instances bits of rodents were found in regurgitated food. There was also evidence that disturbance of the colony by the observer caused the gulls to attack the eggs and young of Caspian terns which had hitherto been unmolested although their nests were situated within the gull colony. The theory is presented that early in the breeding season the gulls may bring the eggs of other species to their nests but because of inadequate stimuli they may not feed upon them, possibly accounting for the observations of others of exotic eggs in gull nests. After the hatching of the young gulls, egg feeding begins and the young probably figure importantly in stimulating the behavior. The nesting period over, this feeding stops and the gulls return to their well known and beneficial habits of following the farmer's plow, feeding on rodents and insects, and as scavengers over a wide range.--John W. Aldrich.

BIRDS--SHOREBIRDS
(See also BIRDS--FISH-EATERS, Cottam)

BIRDS--UPLAND GAME (GENERAL)
(See also MAMMALS--BIG GAME, Schneider; and BIRDS--WATERFOWL, Pitelka)

THOMPSON, DONALD R., and TABER, RICHARD D. Reference tables for dating events in nesting of ring-necked pheasant, bobwhite quail, and Hungarian partridge by aging of broods. Journal of Wildlife Management 12(1): 14-19, illus, January 1948.

Young birds molt their primaries in sequence at definite ages. The ages of broods of wild pheasants were checked from observations made at irregular intervals throughout the summer and fall of 1946 at Madison, Wisconsin.

BIRDS--UPLAND GAME (BOBWHITE)

KORSCHGEN, LEROY J. Late-fall and early-winter food habits of bobwhite quail in Missouri. Journal of Wildlife Management 12(1): 46-57, illus. January 1948.

This report is based on the analysis of more than 5400 crops taken in all parts of the State in the 1940 and 1941 hunting seasons (November 10 to December 31). Quail food habits were different in 3 general regions; Prairie, Ozark, and Mississippi lowlands. Over 97% of the food was plant material of 302 species. Korean lespedeza, corn, common ragweed, sorghum cane, oaks, sassafras, and soybean made up 60% of the total; and 8 more items added over 20% more. During the second year ragweed was taken much less, due apparently to a short seed crop. During the second year Korean lespedeza was taken only a little more, even though the acreage grown had increased by one-third.

MURRAY, ROBERT W. Wintering bobwhite in Boone County, Missouri. Journal of Wildlife Management 12(1): 37-45, illus. January 1948.

Bobwhite were studied from January 1, 1946 to April 1, 1947 on 2 farming areas, each covering about 2000 acres. The area with better farm land had a higher initial population of wintering birds, due to its good supply of food and cover. The area with poorer farm land was in the process of being improved; and from the first winter to the second its population doubled. Meanwhile, the population of the better area increased a little more than 10%. The population increase on the less fertile area was associated with the planting of fallow fields to corn and lespedeza near good fencerow cover. Measures that help to create winter range and at the same time fit in with profitable farming in this part of Missouri are liming, conservative grazing, fencerow cover, and the use of Korean lespedeza.

NESTLER, R. B., and others. Calcium and phosphorus requirements of bobwhite quail chicks. Journal of Wildlife Management 12(1): 32-36. January 1948.

In 1946, 4 experiments at the Patuxent Research Refuge, Laurel, Maryland involved 873 quail chicks. Diets included phosphorus at levels of 0.52, 0.75, 1.00, and 1.25%, with calcium-phosphorus ratios varying from 1:1 to 2 2/3:1. These levels ranged from abnormally low to abnormally high. The optimum level for growth was 0.75% phosphorus and 1% calcium (Ca-P ratio 1 1/3:1). The greatest efficiency of feed utilization was on the 0.52% phosphorus level. Regardless of phosphorus level, bone-ash was lower at 1:1 than any other of 5 ratios. Storage of vitamin A in the liver was especially low at the 2 2/3:1 ratio. Calcium and phosphorus probably are not critical nutrients for growing quail in the wild, because of soil minerals and abundant animal matter.

PHELPS, CHESTER F. Some results of quail restocking experiments in Virginia and neighboring states. Virginia Wildlife 9(4): 16-18,25, illus. April 1948.

The results of both fall and spring restocking on several Virginia areas indicate that ".....it is useless to attempt to establish quail at any one place by restocking." The Virginia experiments and experiments in Kentucky, Missouri, and Oklahoma indicate that ".....carrying capacity of the land is the principal limiting factor of species having the high reproductive rate of quail."

BIRDS--UPLAND GAME (PHEASANT)

GRAHAM, SAMUEL A., and HESTERBERG, GENE. The influence of climate on the ring-necked pheasant. Journal of Wildlife Management 12(1): 9-14, illus. January 1948.

Spring and early summer temperatures on exposed surfaces are thought to be the factor that marks the limits of possible southward distribution.

KOZLIK, FRANK M. Gentle release method of stocking pheasants. Wisconsin Conservation Bulletin 13(5): 12-14, illus. May 1948.

"All evidence gathered in Wisconsin indicates that pheasants stocked from the gentle release pen have an increased survival.....Their fate after the critical release period will depend largely on the quality of range available to them."

NELSON, BERNARD A. Pheasant data from a two-year bag study in South Dakota. Journal of Wildlife Management 12(1): 20-31, illus. January 1948.

More than 14,000 pheasants were examined during the 1945 and 1946 hunting seasons. In 1945 the young to adult ratio was 1:1, while in 1946 it was 1.53:1--still only about half of normal. About 2 cocks were killed to each hen. Reproductive success was best in the southeastern and northeastern parts of the range, poorest in the central part. In southeastern and eastern South Dakota the birds were heavier and had longer spurs. Ages of cocks were determined by spur lengths and ages of hens by examining the bursa of Fabricius.

TITUS, HAROLD. Planning for pheasants. Field & Stream 53(2): 42,149-151, illus. June 1948.

Pheasant populations are down over the entire country. Restricted hunting, more stocking, and habitat improvement are the 3 principal measures that have been proposed to increase them. The author thinks habitat improvement has the best possibilities, although the way ahead with it isn't entirely clear. Perhaps the pheasant is settling down to permanently lower numbers, as have other introduced species.

BIRDS--UPLAND GAME (SAGE GROUSE, ETC.)
(See also BIRDS--SONGBIRDS, Calhoun)

ANONYMOUS. A report on Wyoming sage grouse. Wyoming Wild Life 12(3): 14-19,32-33, illus. March 1948.

377 birds were transplanted in 1947. Previous transplants were made in 1940, 1941, 1942, and 1946. The report describes trapping procedure, field surveys, and nesting studies. Badgers were the principal nest predators in the area studied, where about half of the clutches were destroyed. It was estimated that over one-third of the hens in the area had not nested at all.

BIRDS--UPLAND GAME (SAGE GROUSE, ETC.)--Continued
(See also BIRDS--SONGBIRDS, Calhoun)

BATTERSON, WESLEY M., and MORSE, WILLIAM B. Oregon sage grouse. Oregon State Game Commission, Oregon Fauna Series No. 1. 29 pages, illus. June 1, 1948.

Most of the work here reported upon was done in Baker County in northeastern Oregon. Some of the subjects discussed are population status, the spring strutting season, nesting, young, flocking, food, economics, mortality, and management. The population declined slowly from 1919 to 1946, but now is increasing. Predation by ravens on eggs and young is the greatest limiting factor. There is little conflict with man. For management the authors recommend measurement of population trends, predator control, protection, study of cyclic behavior, and cooperation with land use agencies.

RAND, A. L. Variation in the spruce grouse in Canada. The Auk 65(1): 33-40. January 1948.

Conclusions based on the study of specimens in the National Museum of Canada and the Royal Ontario Museum are at variance with conclusions of other recent students of geographic variation in the spruce grouse. Great individual variation within populations, particularly in females, makes evaluation of geographic trends difficult. The races recognized as distinct are: (1) Canachites canadensis canace, ranging from Nova Scotia and New Brunswick to southern Quebec and southern Ontario, north to Temagami, Lake St. John, and Bonne Esperance; (2) Canachites canadensis canadensis, ranging from Labrador and eastern Quebec through northern and western Ontario to Alberta and southern Mackenzie (Wood Buffalo Park); and (3) Canachites canadensis osgoodi, ranging from central Mackenzie south into northern British Columbia and west to the St. Elias Range, Alaska.--John W. Aldrich.

WALKER, EUGENE A. A study of factors influencing wild turkey populations in the live oak-Spanish oak erosion area of the Edwards Plateau of Texas. 20 pages, illus. Texas Game, Fish and Oyster Commission, Austin. May 1948.

In recent years wild turkeys have been more numerous in live oak-Spanish oak than in the other 2 major vegetation types of the Edwards Plateau. The study on which the report is based was made on 3 areas in the years 1946-1948. Overgrazing, particularly by sheep and goats, was detrimental to turkeys. Supplemental feeding had both favorable and unfavorable results. Predation was not a major influence. The kill by hunters was not too great.

BIRDS--HAWKS & OWLS
(See also MAMMALS--BIG GAME (ANTELOPE, BEAR, ETC.), Kennedy)

ODUM, EUGENE P. Marsh hawks responding to peak abundance of cotton rats. The Oriole 12(4): 48-49. October 1947.

During the fall and winter of 1946-47, cotton rats were very abundant at Athens, Georgia (60-100 per acre in a large broom-grass field). During late winter many marsh hawks congregated in this field, 9 roosting places being located on February 9. At most of these there were many pellets composed of cotton rat remains.

BIRDS--HAWKS & OWLS--Continued
(See also MAMMALS--BIG GAME (ANTELOPE, BEAR, ETC.), Kennedy)

WILLIAMS, RALPH A., and MATTESON, CLYDE P., JR. Wyoming hawks. Wyoming Wild Life 12(1-2): 16-19,37-38, illus. January-February 1948.
The subject of this article is the sparrow hawk, or kestrel. It is a common breeder and the commonest hawk in Wyoming. Grasshoppers are an outstanding food.

BIRDS--SONGBIRDS

CALHOUN, JOHN B. Utilization of artificial nesting substrate by doves and robins. Journal of Wildlife Management 12(2): 136-142, illus. April 1948.
In the spring of 1946 the author nailed 121 roofing paper cones to suitable crotches and forks of trees in a 17½-acre tract at Columbus, Ohio. One-half of the robins in the area used the cones at some time; but less of those attempts were successful than were those not in cones. Most of the doves in the area used the cones at some time, but only one-third of the attempts were successful. The author discusses placement of cones, and concludes that they may be a useful tool in studying behavior patterns in doves.

BENT, ARTHUR CLEVELAND. Life histories of North American nuthatches, wrens, thrashers and their allies. Smithsonian Institution, U. S. National Museum Bulletin 195. 475 pages, illus. 1948. $1.75 from Government Printing Office.
This is the sixteenth in a series of volumes on the life histories of North American birds. The first was published in 1919. In bulletin 195 the author describes 28 species in 6 families (nuthatches, creepers, wren-tits, dippers, wrens, thrashers). He quotes extensively from his own observations and those of many others, coordinating this material under such headings as Spring, Territory, Courtship, Nesting, Eggs, Young, Plumages, Food, Behavior, Voice, Field Marks, Enemies, Fall and Winter, and Distribution. There are 90 plates of photographs, about 500 references to publications, and a detailed index.

REPTILES & AMPHIBIANS

CAGLE, FRED R. Sexual maturity in the male turtle, Pseudemys scripta troostii. Copeia 1948 (2): 108-111, illus. June 1948.
In southern Illinois the males of this commercially important species attain sexual maturity and acquire secondary sex characters (elongate nails on fore feet, increased preanal tail length) when the plastron length is 9-10cm. "Occasionally individuals may become mature at a smaller size. The attainment of maturity is apparently a factor of size rather than age in the populations studied. Individuals in their first season of maturity may be 2-5 years old." Immature males grow rapidly, often in excess of 1cm. per growing season. The growth rate was decidedly higher in one of the populations studied than in the other.--W. H. Stickel

REPTILES & AMPHIBIANS--Continued

CONANT, ROGER. Reptiles and amphibians of the northeastern states. 41 pages, illus. Zoological Society of Philadelphia. 1947. $1.00.

This is a popular yet authoritative guide to the reptiles and amphibians of the area from Maryland to Maine. Each species is illustrated by at least one photograph. Young turtles, which are frequently misidentified, are illustrated by 10 photographs. The concise treatment of each form includes notes on recognition characters, habits, and maximum size. There is an interesting and informative discussion of each major group. Ranges are accurately outlined in a check-list, a device that lightens the text and provides for ready reference. First aid for snake bite is described and illustrated. There is also a section on the care of captive specimens, a list of references, and an index. Any person even casually interested in the subject will find this work of value for either reading or reference. It is easily understood by children of 10 or 12, but professional naturalists will frequently consult it. Fortunately, the price of this booklet puts it with the reach of everyone. Many other popular, thoroughly illustrated, regional references of this calibre dealing with groups of animals and plants are needed for effective conservation education.--W. H. Stickel.

FINNERAN, L. C. Diamond-back terrapin in Connecticut. Copeia 1948 (2): 138. June 1948.

Several observations are cited to show that this economically important species is becoming fairly common along the Connecticut coast. Some states have laws protecting this resource, but Connecticut does not.--W. H. Stickel.

NEILL, W. T. Hibernation of amphibians and reptiles in Richmond County, Georgia. Herpetologica 4(3): 107-114. February 1948.

All species known from the county are listed and descriptions of overwintering habits are given for a large part of them. The theory is advanced that rattlesnakes, Crotalus horridus atricaudatus,".....for a radius of at least 20 miles, converge each year upon an area of limestone caves....." and that ".....the extremely hot days of August provide the stimulus that starts the rattlesnakes on their way to the dens; and that they reach their winter retreats by the same well-defined paths, year after year."--W. H. Stickel.

NEILL, W. T. Size and habits of the cottonmouth moccasin. Herpetologica 3(6): 203-205. July 1947.

Notes on size, feeding, hibernation, resistance to its own venom, and ability to defend itself against king snakes in captivity. The largest moccasin of over 400 Georgia specimens collected measured 69 inches. In at least one locality many moccasins were more than 58.5 inches long, the maximum length sometimes cited. One specimen in the wild approached and attacked a man without provocation. This is said to be the first record of unprovoked attack on man.--W. H. Stickel.

REPTILES & AMPHIBIANS--Continued

RANEY, E. C. and ROECKER, R. M. Food and growth of two species of watersnakes from western New York. Copeia 1947 (3): 171-174. September 1947.

Stomach contents of 59 Natrix sipedon and 45 N. septemvittata were analysed. The food of sipedon was 95.8% (by volume) fishes, chiefly suckers and minnows, and 4.2% tadpoles. The food of septemvittata was 99.4% crayfish. Bass were present in the streams where the snakes were collected, but were not found to have been taken by the snakes. The lengths of 96 sipedon and 83 septemvittata are graphed. Young increase in length about 50% their first year.--W. H. Stickel.

REESE, A. M. Bibliography of the Crocodillia. Herpetologica 4(2): 43-54. December 1947.

A partial list of the world literature on crocodilians, living and fossil. The 261 titles include papers on a wide variety of subjects, many from foreign journals. The author does not claim that the bibliography is complete, and a brief check reveals the omission of several major works. There are, for example, no entries for Deraniyagala or Malcolm A. Smith.--W. H. Stickel.

SMITH, H. M., and TAYLOR, E. H. An annotated checklist and key to the Amphibia of Mexico. Smithsonian Institution, U. S. National Museum Bulletin 194. 118 pages. 1948. 50¢ from Government Printing Office.

This paper is a welcome guide to the complex amphibian fauna of Mexico. The scores of new species discovered in recent years, largely through the efforts of the present authors, are here summarized. On the basis of the study of 40,000 specimens the authors recognize 161 species of frogs and 64 forms of salamanders. A feature that might well be emulated by authors of other faunal lists is the inclusion of keys to all groups, from order to subspecies. The treatment of each form consists of synonymy, location of type, type locality, and complete known range. Necessary taxonomic comments appear as footnotes.--W. H. Stickel.

STEBBINS, R. C. Additional observations on home ranges and longevity in the lizard Sceloporus graciosus. Copeia 1948 (1): 20-22. April 1948.

A third report on a population studied at the Lassen Volcanic National Park, California, in 1942, 1945, and 1947. It is estimated that the population present in 1942 was halved in 2 years, reduced to one-third in 3 years, and to one-tenth in 5 years. Some individuals live at least 8 years. Older lizards are especially wary. The lizards are quite constant to their home ranges, which are usually less than 100 feet across; but slight range shifts occasionally occur.--W. H. Stickel.

WOODBURY, ANGUS M. Marking reptiles with an electric tattooing outfit. Copeia 1948 (2): 127-128. June 1948.

The construction of a tattooing machine from common materials is described. The apparatus proved satisfactory in marking several kinds of snakes with India ink. The author believes the method applicable to lizards, amphibians, and fishes. Snakes were tattooed on the ventral tail base or under the neck. When the neck was marked it was necessary to pull the ventrals to one side and tattoo against the ribs. Tattooed marks did not show well on pigmented surfaces. "The writer prefers this method to that of scale clipping, largely because of the difficulty of establishing a satisfactory base from which

REPTILES & AMPHIBIANS--Continued

to count to the scales that are clipped and the consequent uncertainty in individual identification." (This uncertainty is obviated in the Blanchard and Finster system of scale clipping (Ecology 14: 334-347. 1933) by beginning each set of marks on an even numbered scale: there is rarely if ever difficulty determining whether the first mark is 2,4 or 6, etc. A stronger argument against scale clipping is that the marks are not always permanent.)--W. H. Stickel.

WOODBURY, ANGUS M., and HARDY, ROSS. Studies of the desert tortoise, Gopherus agassizii. Ecological Monographs 18(2): 145-200, illus. April 1948.

Between 1936 and 1946 the authors made about 90 trips to the Beaver Dam Slope, Washington Co., southwestern Utah, where they marked 281 tortoises and recaptured 182 of these a total of 812 times. They report in detail on their methods and on tortoise characters, life history, and ecology. The principal plants and animals of the desert are listed. The tortoises spent the winters in underground dens; while during too cold nights or too hot days in summer they went into individual holes. Their principal food was grass. They had small, overlapping home ranges; but they apparently did not defend home range, den, or summer hole against others. Brush fires, predators, and human beings are their principal enemies. The desert tortoise lays few eggs and grows slowly; and there is particular need of protecting it against being collected by service station operators for the tourist trade. The article has a list of about 100 references.

INVERTEBRATES (GENERAL)

WEISS, CHARLES M. The seasonal occurrence of sedentary marine organisms in Biscayne Bay, Florida. Ecology 29 (2): 153-172, illus. April 1948.

Records of monthly accumulations of fouling organisms were kept for 4 years at 3 sites. All forms fluctuated in abundance seasonally; some varied from year to year. There was marked variation in occurrence of the same organisms in localities as close together as 2600 yards. The complex was dominated by barnacles in the early succession and by tunicates and encrusting bryozoons later. Heavy fouling is favored by periodic exposure to bay water that is little mixed with ocean water, moderate tidal currents, proximity of concrete bulkheads and pilings, and moderate pollution.

CRUSTACEANS

PEARSON, JOHN C. Fluctuations in the abundance of blue crab in Chesapeake Bay. U. S. D. I., Fish and Wildlife Service, Research Report 14. 26 pages, illus. 1948. 10¢ from Government Printing Office.

The blue crab (Callinectes sapidus) supports the largest crab fishery in the United States. The catch in 1939 was worth at least 3 million dollars to the fisherman. Fluctuations in abundance in Chesapeake Bay, one of the principal producing areas, make the industry there unstable. The author reviews the crab's life history, production, and fluctuations in abundance. He concludes that low salinity due to heavy discharge from the Potomac and James during the spawning season is unfavorable to a high survival of young crabs, while higher salinity due to light discharge is favorable. So far, the number of adult females has not determined the size of the surviving population.

INSECTS

IMMS, A. D. Insect natural history. 317 pages, illus. Collins, Toronto. 1947. $4.50.

This book is entertaining and instructive. It has many beautiful color photographs, many black and whites, and many drawings. The abstractor looks forward eagerly to the day when all photographic illustrations accompanying biological writings completely cover the subject and are large, clear, and in natural color.

SWAIN, RALPH B. The insect guide: orders and major families of North American insects. 307 pages, illus. Doubleday & Co.,Inc., Garden City, N. Y. 1948. $3.00.

The author describes insects, family by family, under the headings: adults, young, importance, and examples. The one on importance has much ecological information. The specific examples have been beautifully drawn (mostly in color) by SuZan N. Swain. These drawings are grouped in the center of the book. The families and drawings are numbered alike, so it is possible to refer readily from one to the other. Drawings in the introduction distinguish insects from other arthropods and show variations in mouth parts, antennae, and development. Drawings also illustrate a chapter on collecting, preserving, and studying insects.

VEGETATION--FLORAS & MANUALS

CORE, EARL L. The flora of the Erie islands; an annotated list of vascular plants. The Ohio State University, The Franz Theodore Stone Laboratory, Contribution No. 9. 106 pages, illus. 1948.

More than 800 species and varieties are recorded from this group of 21 islands in western Lake Erie. The largest island is Pelee(10,000 acres). There are a brief account of the environment and rather detailed accounts of the plant communities and the individual islands.

VEGETATION--MANAGEMENT

JENKINS, B. C. The role of fire in wildlife management. Michigan Conservation 17(4): 7,12, illus. April 1948.

Several profitable results are obtained through efficient, periodic, controlled burning of brushy areas. The Michigan Game Division started experiments in 1942 and found controlled burning effective and profitable in wildlife management; and could be used when release cutting and plantings were inadequate. One particular finding of importance was the fact that this practice, carried out correctly and under favorable conditions, improved blueberry production. Sportsmen find controlled burning most desirable for the management of sharp-tailed grouse and prairie chicken habitats. Also the quality as well as quantity of forage was increased on burned areas.
--M. Alberts

VEGETATION--MANAGEMENT--Continued

JENKINS, B. C., and McGINLEY, H. D. Planting trees and shrubs for wildlife. Michigan Conservation 17(7): 10-12, illus. July 1948.

Experimental plantings were first tried in Michigan in the fall of 1931. The purpose of these plantings was to bring relief to browsed out deeryards. By the fall of 1934, 1000 acres were planted. The results were not encouraging because the deer killed the seedlings before they could provide food. In general, this program has not been highly successful. However, it is being continued and present plans call for planting about 1½ million trees and shrubs annually.--M. Alberts.

WAKELEY, M.X C., and TUBBS, FARLEY F. Timber cutting as a tool in game management. Michigan Conservation 17(3): 3,10-11,13, illus. March 1948.

Experimental cutting in Michigan was carried on during the years 1935-1940 and is now being used to regulate food and cover conditions. It has proved especially important in the successful management of deeryards. The author brings out the fact that planned rotation of the cutting is necessary for desirable results and maxium deer browse. During the past winter (1947-48) the Forestry Division issued permits for cutting about 9,000 acres of timber in deeryards or in adjacent winter deer range. In addition to aiding the deer, upland game birds and rabbits are also benefited by swamp timber cutting.--M. Alberts.

VEGETATION--FOREST
(See also LAND & SOILS, Wilde)

WILDE, S. A., WHITFORD, PHILIP B., and YOUNGBERG, C. T. Relation of soils and forest growth in the driftless area of southwestern Wisconsin. Ecology 29(2): 173-180, illus. April 1948.

The authors studied the distribution of native vegetation and the rate of forest growth on 2 transects. One, about 4 miles long, crossed the Wisconsin River near Arena. The other, about 2 miles long, crossed the Pine River near Hub City. There are concise descriptions of soils and vegetation of the following units: prairie soils, prairie-forest soils, nut-structured loams, podzolized nut-structured loams, eroded loams, overwash loams, gley loams, limestone rockland, dune sands, outwash sands, sandstone rockland, podzolized sandstone rockland, stream bottom soils, flood plain soils, moss peat, and sedge peat. Mammal activity helps to maintain the prairie soils and vegetation. Prairie-forest soils(oak openings) are important in the maintenance of prairie chickens and sharp-tailed grouse. Stream bottom soils are important to mammals, birds, and fish. Sedge peat is useful to waterfowl, pheasants, muskrats, and sometimes to prairie chickens. The soil types vary greatly in their timber productivity and the ease with which they may be reforested.

VEGETATION--GRASSLAND

BENTLEY, J. R., and TALBOT, M. W. Annual-plant vegetation of the California foothills as related to range management. Ecology 29(1): 72-79, illus. January 1948.

The climate and the present forage cover are discussed, as well as range management objectives for the California foothills. "Broadly stated, the objectives are as follows: (1) obtain maxium production and most efficient utilization of the native and introduced annual species now present; (2) increase the production from the present stands of valuable perennial bunch grasses; and (3) establish the best annual and perennial species (introduced or native) on areas where they do not occur or are of limited importance at the present time."--M. Alberts

CANFIELD, R. H. Perennial grass composition as an indicator of condition of southwestern mixed grass ranges. Ecology 29(2): 190-204, illus. April 1948.

The author describes mesa type range (mesquite grassland) and foothill type range (mixed grama grassland). He discusses for each type the perennial grass indicators, characteristic composition of range in unsatisfactory and satisfactory condition, rate of range recovery under nongrazing, and stabilized condition. Relative amounts of common perennial grasses showed the early changes toward range recovery or deterioration better than did any other indicator. Good range maintains itself under conservative grazing. Conservative grazing or absence of grazing permit grass to improve without affecting greatly the occurrence of relatively unpalatable, deep-rooted trees and shrubs.

WEAVER, J. E. and DARLAND, R. W. Changes in vegetation and production of forage resulting from grazing lowland prairie. Ecology 29(1): 1-29, illus. January 1948.

Iowa, Nebraska, and adjacent territory at one time supported an almost boundless sea of true prairie grassland. Native prairie is well adapted to grazing animals, but to maintain production moderate grazing must be practiced. A study of growth requirements of native plants was made on a tract of approximately 50 acres near Havelock, Nebraska, from 1943 to 1946. "Frequent examination of the species that were being grazed was made and especially the degree to which they were grazed and their response to grazing injury were observed. This was supplemented by means of numerous, large, portable exclosures which protected selected areas from disturbance each month, thus furnishing an excellent criterion of the rate of growth in the prairie and, by clipping, the quantity of forage consumed." On the tract were 3 types of grass: (1) western wheat grass, which had invaded the native prairie during drought, (2) Kentucky bluegrass, which resulted from previous grazing, and (3) native prairie, mostly big bluestem. The native prairie grasses were grazed first. Then, after intense grazing and drought, bluegrass came in. "In the weakened and less dense bluegrass sod native weedy forbs and shrubs spread rapidly and many weeds found only in old pastures became established. This forshadowed the final weed stage in degeneration."--M. Alberts

VEGETATION--WILDLIFE PLANTS

CHAPMAN, FLOYD B. Tree and shrub units for wildlife habitat improvement. The Ohio Division of Conservation and Natural Resources, Wildlife Conservation Bulletin No.3. 18 pages, illus. December 1947.

The author discusses the selection of evergreens and shrubs for wildlife cover and food, with emphasis on red, white, and Scotch pines and multiflora rosé. Photos and drawings show what has been and can be done.

STANFORD, JACK. A living fence--the multiflora rose. Missouri Conservationist 8(9): 1-3, illus. September 1947.

Multiflora rose appears to be the answer to the problem of a satisfactory game cover for crop land. Experiments carried on by the Soil Conservation Service showed the plant favorable for nesting, escape, and winter cover for quail and other farm game. It also provides an inexpensive, permanent livestock barrier. At present, planting stock is scarce; but efforts are being made by the Conservation Commission to make it available to landowners at a low cost.--M. Alberts

WANDELL, WILLET N. Improving fencerows and ditchbanks on Illinois farms. 5 pages. Illinois Natural History Survey, Urbana, Illinois. January 1948.

The lack of suitable cover in Illinois has limited the wildlife population. The Illinois Natural History Survey studied the problem and found that the development of suitable fence rows improved the situation considerably. Osage orange hedgerows once used in Illinois were found to be undesirable. Asiatic or multiflora rose proved ideal after several other species were tried. It has these advantages: it produces a fence that will hold all forms of livestock; reduces wind erosion; cuts down moisture loss from field; improves the appearance of farm lands; and, perhaps most important of all, it attracts songbirds and other wildlife, providing nesting and winter cover and a supplement to the normal food resource. Multiflora rose is also important in controlling erosion along streams.--M. Alberts

VEGETATION--AQUATIC

CAVE-BROWN-CAVE, T. R. The drainage of Binley Lake and its ecological consequences. Nature 161(4090): 420-421, illus. March 20, 1948.

Nearly a million fish were removed from this 90-acre lake when it was drained late in 1942. During the summer of 1943 dense vegetation developed on the deep soil of the bottom (see Summerhayes & Turrill abstract, page 36). In October 1944 the lake was reflooded; and by early 1946 there were large areas of open water with belts of Typha latifolia along the shores. At that time stocking with roach, bream, pike, rudd, and tench was begun. In July 1947 Ceratophyllum was so abundant nearly everywhere in the lake that fishing was almost impossible. The fish were in good condition.

GATES, FRANK C. Colonization of certain aquatic plants on an open shoal. Ecology 29(2): 205-208, illus. April 1948.

Douglas Lake, Cheboygan Co., Michigan has 2 large shallowly submerged flats on which emergent aquatics have been planted. Plantings on the storm-swept flat have been unsuccessful; but Scirpus acutus and Eleocharis macrostachya planted in 1926 on the other flat have spread over a considerable area (a 190-fold increase in the case of the Eleocharis). Growth has been better along the edge than on top of the flat.

VEGETATION--AQUATIC---Continued

SUMMERHAYES, V. S., and TURRILL, W. B. Vegetation after draining. Nature 161(4090): 421. March 20, 1948.

The authors visited Binley Lake (see Cave-Brown-Cave abstract, page 35) in December 1943 and found Typha latifolia the dominant growth where there had been a lake less than 12 months before. Many Typha seedlings, low-growing marsh plants, and dry land mosses grew among the larger plants. Willows were locally abundant and there was some Phragmites and Glyceria maxima.

WOOD, R. D. Characeae of the Put-in-Bay region of Lake Erie(Ohio). The Ohio Journal of Science 47(6): 240-258, illus. November 1947.

4 species of Nitella, 1 of Tolypella, and 8 of Chara are keyed, described, and figured. There are notes on distribution and a little on habitat; and good notes on collecting and study technique. About 50 references are listed.

LAND & SOILS

(See also VEGETATION--FOREST, Wilde and others)

ANONYMOUS. Opportunities in Florida.....a look at the record. 423 pages, illus. State Department of Agriculture, Bureau of Immigration, Tallahassee, Fla. 1947.

This book is a compendium of information about Florida. Most of its nearly 200 brief accounts of various crops and manufactures are quoted from recent newspaper articles. They convey the notion that natural resources and the possibilities of technological developments are unlimited.

DIEFFENBACH, RUDOLPH. River development programs and their relationship to fish and wildlife resources. Journal of Wildlife Management 12(1): 96-104. January 1948.

The Coordinator of River Basin Studies, U. S. Fish and Wildlife Service, describes the work of his organization. This office carries out the requirement of an act, approved August 14, 1946, ".....that biological resources be given proper consideration in Federal construction,....." Therefore it makes ".....detailed investigations and reports on the effects of impoundment projects on fish and wildlife,....." and submits them to the sponsors (primarily Army Engineers or Interior's Bureau of Reclamation) ".....who will consider them as integral parts of project plans." The author describes the organization, the basis of evaluation, the types of investigations and reports, the complex conditions produced by impoundments that must be considered, and the ultimate effects of the water programs that will be carried out.

LUTZ, HAROLD J. and CHANDLER, ROBERT F., JR. Forest soils. 514 pages, illus. John Wiley & Sons, Inc. New York. 1946. $5.25.

This textbook covers the fundamentals of soil science and their application to forestry. At the end of each of its 13 chapters are many references. The principal subjects discussed are soil-forming minerals and rocks, soil organisms and organic matter, colloids, properties of forest soils, water relations, soil formation, forest soil classification, erosion, and forest-soil deterioration. In addition to discussing soils thoroughly from many angles, the authors emphasize the influence of parent material on

LAND & SOILS--Continued
(See also VEGETATION--FOREST, Wilde and others)

native vegetation; the role of small mammals, arthropods, earthworms, and other animals in breaking down organic matter and cultivating the soil; and the role of protozoa, bacteria, fungi, actinomyces, etc. in decomposing organic matter. They discuss, in detail, humus and the conditions of its formation; its importance in forest production and measures for improving it. They follow descriptions of several of the physical and chemical properties of soils with discussions of their ecological significance.

WAGNER, HELMUTH O., and LENZ, HANS. El bosque y la conservacion del suelo; su importancia cultural y economica. 169 pages, illus. Editorial Cultura, T. G., S. A. Mexico, D. F. 1948.

The urgent need for conservation of forests and soil and their wise use is discussed. Mexico, in the past, has been using its forests and soil indiscriminately, without any consideration of the consequences. The result is that these natural resources are almost depleted. Today Mexico faces the problem of reforesting misused areas and conserving what is left of the soil. In order to present a background for the problem of conservation, the authors devote a large portion of the book to the influence of different factors such as rainfall, soil pH, winds, depth of soil water, evaporation, altitude, etc., upon vegetation. The upset of the equilibrium of these factors, by man, is the cause of Mexico's plight. The author offers suggestions that the Mexicans should follow in order to carry out a program of conservation successfully. There are excellent sketches that clearly illustrate these points.--M. Alberts

WILDE, S. A. Forest soils and forest growth. 241 pages, illus. Chronica Botanica Co., Waltham, Mass. 1946. $5.00.

This live book describes the origin of forest soils as a whole and by groups based on major differences in environment. It discusses forest soils as a whole and by groups based on major differences in environment. It discusses forest cover and its relation to environment; then analyzes forest soils as to their physical and chemical properties, their organisms and humus. 3 chapters apply the knowledge of forest soils to the practices of tree planting, soil improvement, and silvicultural cuttings. 5 chapters deal with forest nurseries: sites, irrigation, fertilizers, fertility maintenance, parasites, etc. There are figures that show various interrelationships, a bibliography of about 650 titles, and author and subject indexes.

WATER

WELCH, PAUL S. Limnological methods. 370 pages, illus. The Blakiston Company, Philadelphia. 1948.

"The purpose of this volume is to present the essentials of those basic methods necessary for (a) entry into the subject of limnology, (b) limnological surveys of lakes and streams, and (c) fundamental information upon which specialized researches depend." The book is divided into four parts: (1) Hydrographic mapping and morphometry, (2) Physical methods, (3) Chemical methods (4) Biological methods. References are listed at the ends of chapter. --M. Alberts

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